



A Review of Cyber Security Issues and Inmarsat's approach

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01

What is a cyber security?

What is Cyber Security?

It has become a hot topic recently but few understand what it consists of

In brief;

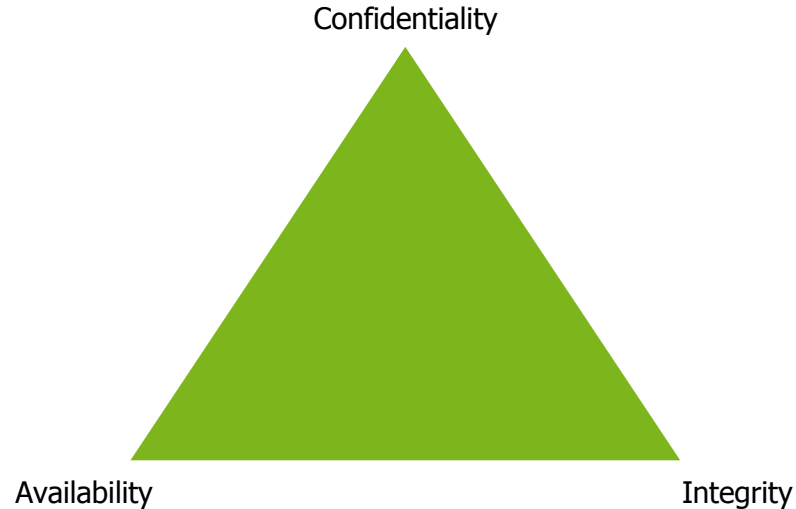
- > Cyber security is protection from harm to an asset in the electronic domain
- > An asset can be anything from a human being, a server, phone system to a piece of software
- > The processes are designed to protect these assets from damage, attack or unauthorised access utilising both cyber and physical security



What does cyber security accomplish for the asset?

The CIA Triad is a common graphic shown how cyber security works for the asset, its common practise to use this framework when applying any security to an asset...

- > Confidentiality
Guaranteeing the asset is securely hidden from those who don't have authority
- > Integrity
Ensuring the asset is accurate and unchanged from the original source
- > Availability
Confirm the asset is readily available when its needed to the authorised user

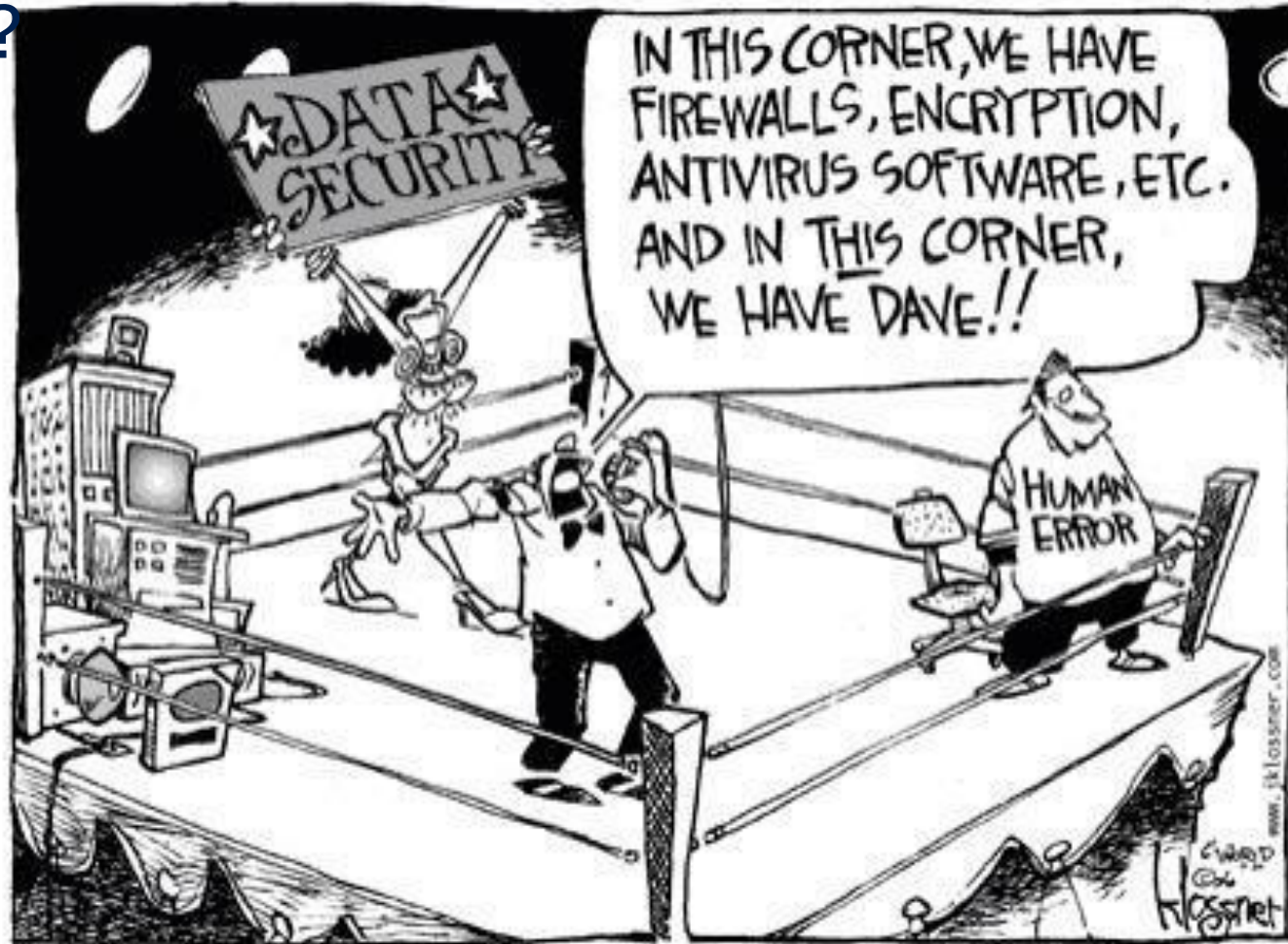


All three points must be covered to be considered as secure

Beware the User?

All the Cyber Security in the world can't protect from Human error.

User awareness is just as important as the Tech!



02

Is it real?



Maritime Cyber Resilience

Maxwell Cooter
February 13, 2015

Royal Navy under threat from cyber-attacks

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The Royal Navy is under an increasing danger of cyber-attack and the government should ramp up training to deal with the threat.

That's according to a report from researchers at the University of Lancaster who found that maritime systems were especially susceptible to computer attacks and that ageing systems and a lack of training were particular barriers.

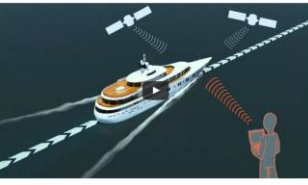
Security consultant Brian Honan said that all navies, indeed all shipping companies, were vulnerable to these threats. "What the report highlights is that many ships use Windows XP or Windows Server 2003 – one of which Microsoft



Royal Navy under threat from cyber-attacks

Students Take Control of \$80 Million Superyacht Using Fake GPS Signals

David Pecking
Texas A&M University



They—Texas did something smart! By sending fake GPS data to a superyacht's navigation system, University of Texas students were able to override the actual GPS signals and send an \$80 million ship veering off course without setting any dangerous whatsoever.

Plenty of phish in the sea

Published on June 15, 2015 by David Rider · No Comments

Shipping industry again warned of cyber threat.

Plenty of phish in the sea

Advancement in broadband technologies and the move towards 'Big Data' will leave the maritime industry vulnerable to cyber-crime unless it develops a better awareness of ICT security and adopts security best practice, warns ESC Global Security's head of cyber security division.



GIZMODO

Ships Have Black Boxes—And Apparently, They're a Cinch to Hack

Ben Luhn
Panda Security



Voice, navigation, and radar data aboard ships are all at risk, according to an expert who claims that some devices that contain sensitive ship information just aren't secure enough. This could be good news for pirates and spies, and bad news for the good guys.

Cyber Attack Targets Tankers

By MarEx 2015-05-20 04:40:23

IT company Panda Security has released Operation Oil Tanker: The Phantom Menace, a report that details a malicious and largely unknown targeted attack on oil tankers.

First discovered by Panda Security in January 2014, the ongoing attack on oil cargo began in August 2013 and is designed to steal information and credentials for defrauding oil brokers.

Despite having been compromised by this cyber attack, which Panda has dubbed "The Phantom Menace", none of the dozens of affected companies have been willing to report the invasion and risk global attention for vulnerabilities in their IT security networks.





inmarsat
The mobile satellite company

Uncharted Waters – maritime learning & leading

**White Paper from
Professor Paul Dorey Ph.D.CISM F.Inst.ISP**



03

Why now?



inmarsat

The mobile satellite company

One thousand fold increase in data storage in the next decade

In 2019, the gigabyte equivalent of **all movies ever made** will cross global IP networks **every 2 minutes**



Global **mobile data** traffic will **increase nearly eightfold** between 2015 and 2020, reaching 30.6 exabytes per month by 2020

The average **smartphone** will generate 4.4 GB of **traffic per month** by 2020, nearly a **fivefold increase** over the 2015 average of 929 MB per month



90%

of global trade
transported by sea

9bn

tonnes per annum
as of today

19-24bn

tonnes per annum
by 2030

Growth in world population continues to bring more
growth for trade of goods and energy

By 2030 energy demand increases to about 40%
higher than today

The data drive

Big Data transforms business

0.05

Seconds between each motion measurement on a ship

2,800

Sensors hardwired into the Triple E vessel's main control system

5,000

Data tags on modern vessel

200

Sensors in a modern main engine room measuring temperature and pressure

7,000

Channels monitored on the Triple E for situational awareness and alarms

2GB

Data stored every day from the main control system of a Triple E vessel

2TB

Data generated every 100 days by a modern vessel

30TB

Transmitted by Maersk line fleet over satellite link every month

**\$20M annual
fuel cost
savings**

Source: Maersk Group



Current cyber landscape

future nautics Research
the maritime future

13 September 2017

The background is a dark blue field filled with a pattern of light blue hexagons. Overlaid on this are streams of white binary code (0s and 1s) and numerous small, light blue padlock icons, some of which are open and some are closed.

44%

believe their company's current IT
defences are not effective at repelling
cyber attacks

The background is a dark blue field filled with a pattern of light blue hexagons. Overlaid on this are streams of white binary code (0s and 1s) and numerous small, light blue padlock icons, some of which are open and some are closed. The overall theme is digital security and cyber risk.

50%

not confident they would know
about a cyber issue onboard

The background is a dark blue field featuring a pattern of light blue hexagons. Scattered throughout are binary digits (0s and 1s) and small, light blue padlock icons, some of which are open and some are closed. The overall theme is digital security and cyber threats.

39%

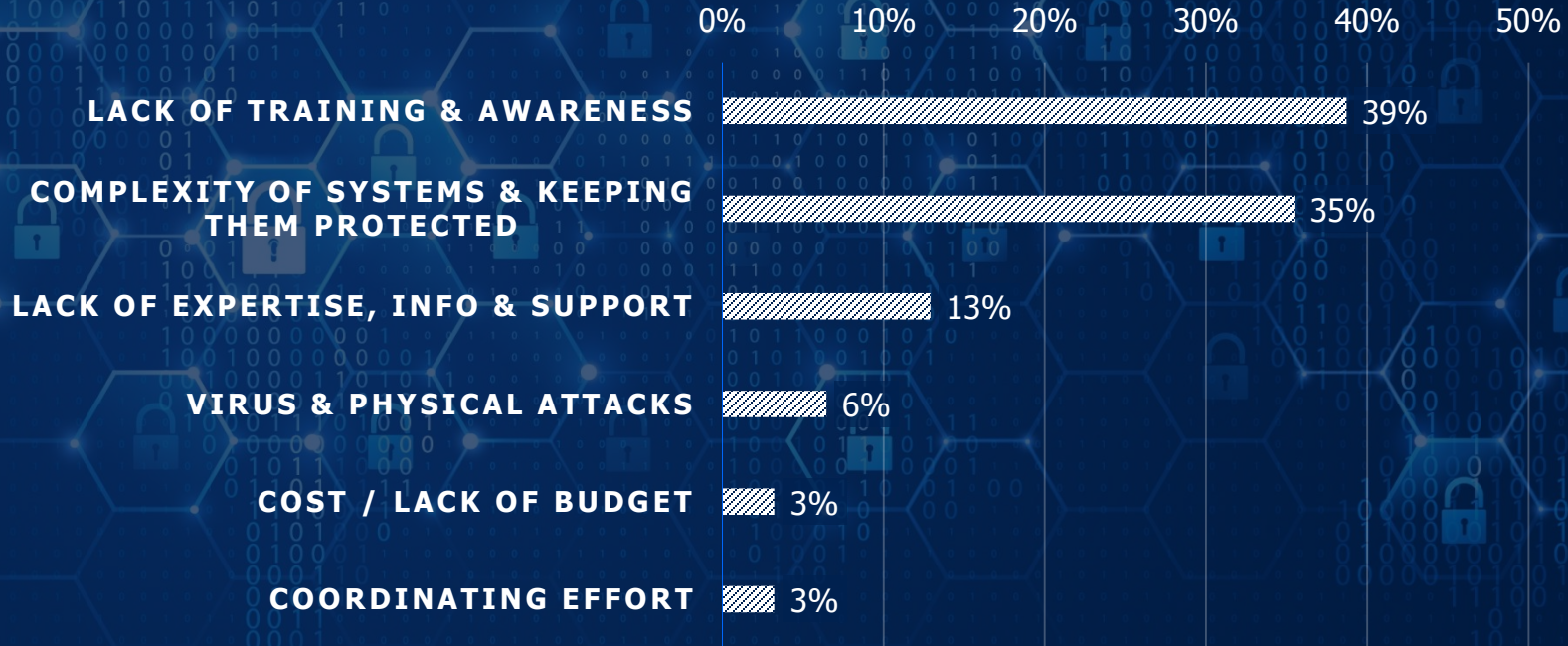
experienced a cyber attack
in the last 12 months

The background is a dark blue field filled with a pattern of light blue hexagons. Overlaid on this are numerous binary digits (0s and 1s) and small, light blue padlock icons, suggesting a theme of digital security and data protection.

42%

of companies were asked by their customers about their IT security credentials in the last 12 months

Main concerns and challenges for ship operators



Source: Ship Operators Cyber Security Survey by FutureNautics September 2017

04

Inmarsat's approach

Inmarsat's approach to cyber security

Internal

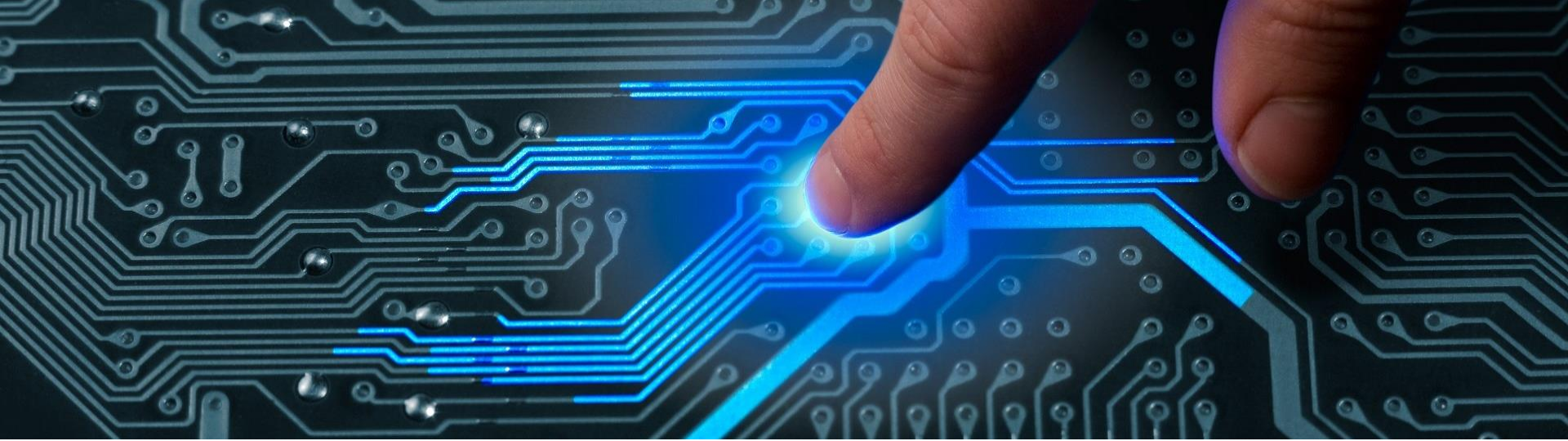
Inmarsat is undergoing ISO27001 certification



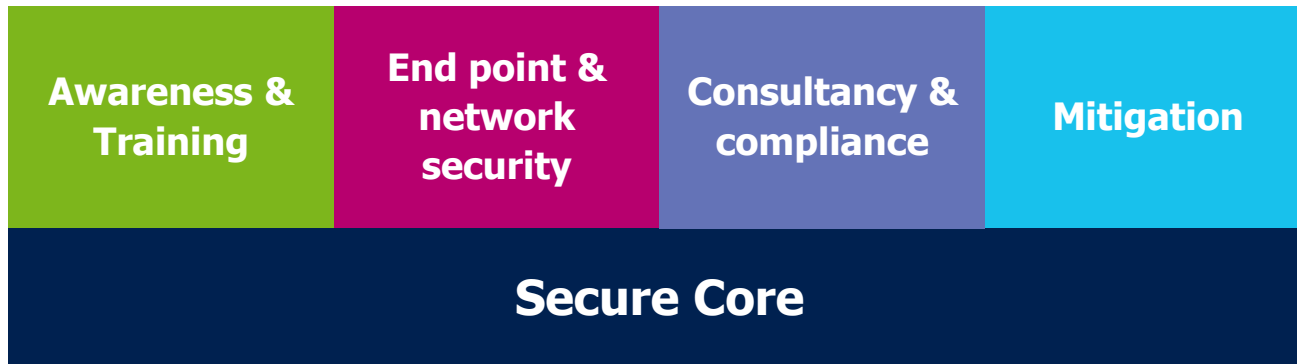
This is a specification for an information security management system which will ensure that Inmarsat's internal structure uses technologies and best practice to secure assets, customer data, employee data, intellectual properties etc

External

External products and services are being built with security in mind. For example the SAS are in gated compounds, hosting military and government equipment. The satellite telemetry is a closed system with no internet access. Encryption is used over the satellite link and in the core components



Inmarsat is building a portfolio of security services



New Unified Threat Management

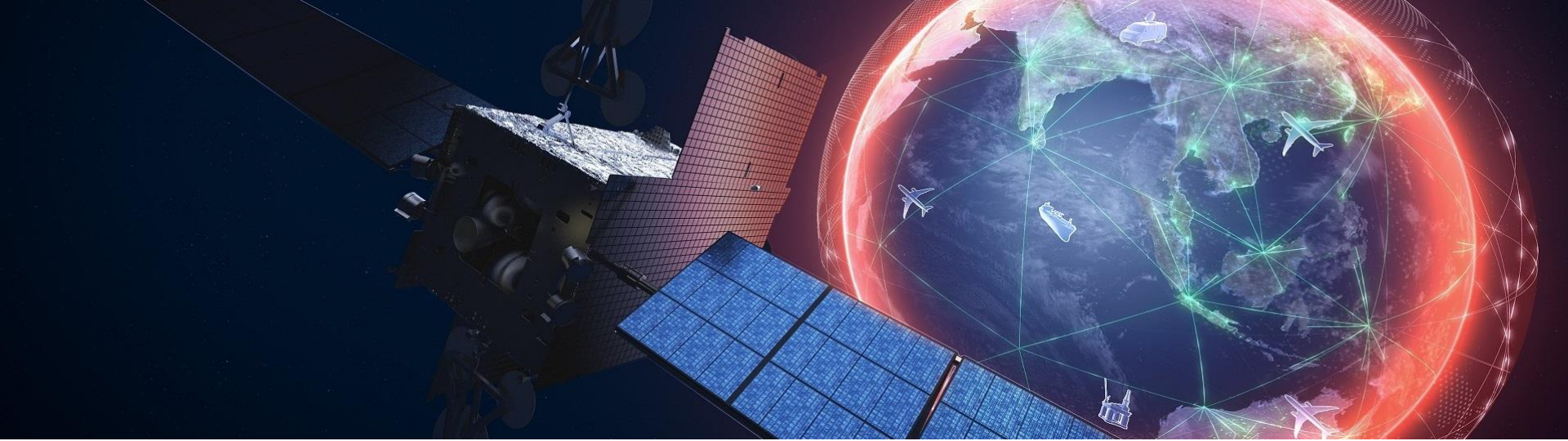
Launch of a new maritime cyber security solution

- > Offers vessel operators/managers the tools they need to protect their fleet from cyber attack, detect vulnerabilities, and respond to threats
- > Seamlessly incorporates multiple security functions into a single service:
 - > Firewall
 - > Intrusion prevention system, with a dedicated virus signature library
 - > Web content filtering to prevent access to unsafe or inappropriate websites
 - > Inmarsat Gateway anti-virus software, used to scan web content as it is being accessed, looking for known viruses

Maritime-specific UTM

Choice of three managed service levels

Seamless integration with Fleet Xpress



> Inspect

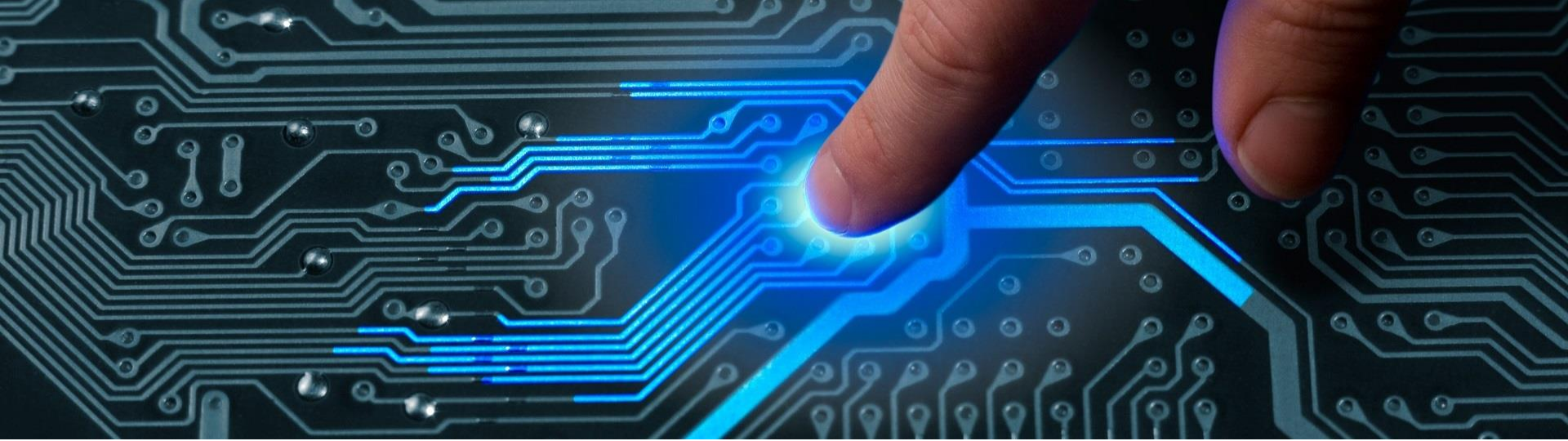
Firewall

Web content
filtering

Application
control

Intrusion
Prevention
Systems

Gateway
Anti-virus



> Detect



Bronze



Silver

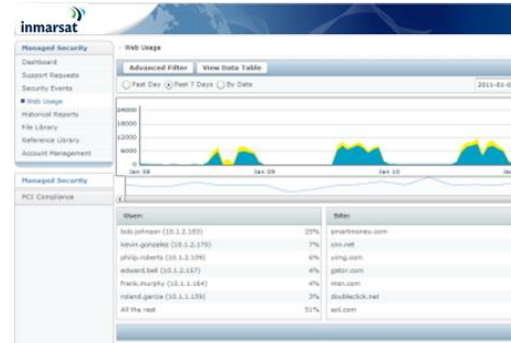
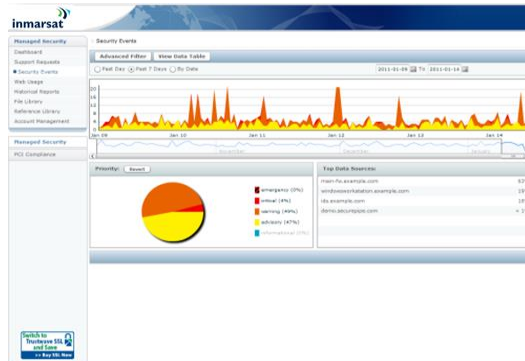


Gold

Three managed service levels



> Protect



Fleet Secure

Powering Cyber
Resilience at Sea



Inmarsat Endpoint Protection

Standard Anti-Virus is no longer adequate protection



More than Anti-Virus

Standard Anti-Virus is no longer adequate protection

	Generic Anti-Virus	Inmarsat Endpoint Protection
Antivirus and Antispyware	X	X
Virtualization Support	X	X
Anti-Phishing	X	X
Web control		X
Two-Way Firewall		X
Botnet Protection		X
Basic Remote Monitoring	X	X
Advanced Remote Monitoring		X
Network Monitoring		X
IP Downloads of updates		X
Reporting of per PC status (infection, firewall etc)		X
Multi engine scanning		X
Ransomware prevention		X

Inmarsat Maritime Cyber Awareness Course

Working with partners MLA, Stapelton International, IMAREST

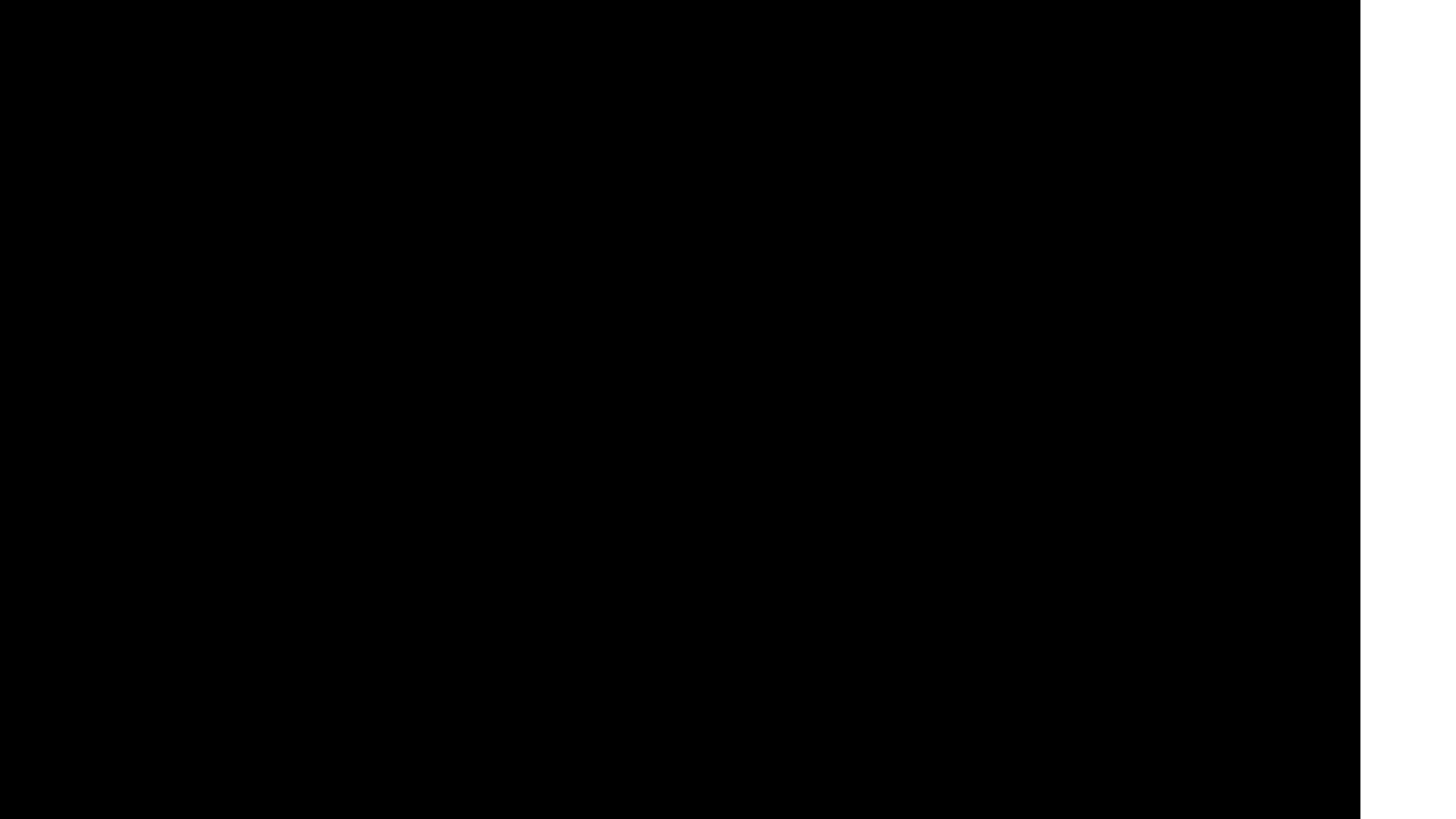
e-Learning platform for smart phones.

The content of the course is in accordance with guidelines on Maritime Cyber Security published by IMO (International Maritime Organization), BIMCO (The Baltic and International Maritime Council) and Classification Societies.

Four video lectures (roughly 50 minutes in total) addressing:

1. The cyber security threat
2. The digital threat using your personal information
3. The digital threat using your IT device
4. The physical and human threat.

A test (about 10 minutes to complete) for you to demonstrate your learning.



Driving
innovation

in maritime communications

Building
maritime communities

Shaping
the future of the
connected
ship

Defining
Connectivity at Sea

